CLAIMS

1. (Currently Amended)   A method of identifying an article of interest comprising

providing one of a plurality of RF antennas each having a non-linear element and

being resonant at one of plurality of different frequencies positioned on an article of

interest,

interrogating said one RF antenna with RF energy of a first frequency,

converting said interrogating RF energy into reflected RF energy of a different

frequency from said first frequency, and

sensing said reflected RF energy and on the basis of ~~said different frequencies~~ a

difference between said first frequency and said different frequency determining if a

specific said antenna is present.

2. (Original)   The method of claim 1 including

said non-linear element is a rectifying diode.

3. (Original)   The method of claim 2 including

said specific antenna is present and said different frequency being about double

said first frequency.

4. (Currently Amended)   The method of claim 1 including

said one RF antenna ~~assembly~~ providing a half wave rectified sine wave from said

interrogating RF energy.

5. (Original)   The method of claim 4 including

said interrogating RF energy producing a sine wave.

6. (Currently Amended)   The method of claim 4 including

said half wave rectified sine wave has a fundamental ~~fundament~~ Fourier series

which is about double the frequency of said sine wave.

7. (Original)   The method of claim 1 including

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employing two said interrogating frequencies in determining if an article of interest is present.

8. (Original) The method of claim 7 including

employing a spectrum analyzer in analyzing said different frequency.

9. (Original) The method of claim 1 including

employing a binary analysis in determining if an article of interest is present.

10. (Original) The method of claim 7 including

employing a spectrum analyzer structured to monitor each interrogating frequency in determining if an article of interest is present.

11. (Original) The method of claim 9 including

employing said method to provide specific identification of the antenna if an article of interest is present.

12. (Original) The method of claim 1 including

a second non-linear element cooperating with said non-linear element to provide a variable readout which is a function of a specific physical condition.

13. (Original) The method of claim 1 including

said physical condition being a condition selected from the group consisting of pressure, temperature, pH, chemical concentrations and humidity, chemical environment, biological environment, radiation, and light.

14. (Original) The method of claim 12 including

employing as said non-linear elements a variable non-linear element.

15. (Currently Amended) Apparatus for determining if an article of interest is present comprising

said article ~~articles~~ of interest having at least one antenna being resonant at ~~having~~ one frequency of a plurality of available frequencies,

a non-linear element operatively associated with said antenna,

an RF frequency generator for directing RF energy of a particular frequency to said antenna,

a detector for receiving reflected RF energy ~~which has impinged on~~ from said antenna, and

a processor for determining from <u>a difference between</u> said reflected frequency <u>and said directed particular frequency</u> whether the antenna is a specific antenna.

16. (Original) The apparatus of claim 15 including

said non-linear element being a rectifying diode.

17. (Original) The apparatus of claim 15 including

said RF frequency generator being structured to produce interrogating RF energy in the form of a sine wave.

18. (Original) The apparatus of claim 17 including

said antenna being structured to produce a half wave rectified sine wave from said interrogating RF energy.

19. (Original) The apparatus of claim 18 including

said antenna being structured to provide said half wave rectified sine wave at a fundamental Fourier series component which is about double the frequency of said sine wave.

20. (Original) The apparatus of claim 16 including

said RF frequency generator being structured to provide at least two said interrogating RF frequencies.

21. (Original) The apparatus of claim 16 including

a spectrum analyzer for analyzing said different frequencies.

22. (Original) The apparatus of claim 16 including

a second non-linear element cooperating with said non-linear element to provide a variable readout which is a function of a specific physical condition.

23. (Original) The apparatus of claim 22 including

said physical condition being a condition selected from the group consisting of pressure, temperature, pH, chemical concentrations, humidity, chemical environment, biological environment, radiation, and light.

24. (Currently Amended)   A method of monitoring a an ambient physical property comprising

providing an antenna having a non-linear element whose response depends on the physical property being monitored,

interrogating said RF antenna with RF energy of a first frequency,

converting the interrogating RF energy into reflected RF energy of a different frequency from said first frequency, said different frequency being dependent on the physical property being monitored, and

sensing said reflected RF energy and on the basis of said different frequencies a difference between said first frequency and said different frequency to determine determining the state of said physical property.

25. (Original) The method of claim 24 wherein

said non-linear element is a rectifying diode.

26. (Currently Amended)   The method of claim 25 wherein

said specific antenna is present and said different frequency being about double said first frequency.

27. (Currently Amended)   The method of claim 24 including

said antenna assembly providing a half wave rectified sine wave from said interrogating RF energy.

28. (Original) The method of claim 27 including

said interrogating RF energy producing a sine wave.

29. (Currently Amended) The method of claim 27 including

said half wave rectified sine wave has a ~~fundament~~ fundamental Fourier series

which is about double the frequency of said sine wave.

30. (Original) The method of claim 24 including

employing a spectrum analyzer in analyzing said different frequency.

31. (Original) The method of claim 24 including

employing a second non-linear element cooperating with said non-linear element

to provide a determination regarding whether an article of interest is present.

32. (Currently Amended) The method of claim 24 including

said ambient physical ~~condition~~ property being a condition selected from the

group consisting of pressure, temperature, pH, chemical concentrations and humidity,

chemical environment, biological environment, radiation, and light.

33. (Currently Amended) Apparatus for monitoring ~~a~~ an ambient physical property

comprising

an antenna being resonant at ~~having~~ one frequency of a plurality of available

frequencies,

a non-linear element operatively associated with said antenna whose response

depends on the physical property being monitored,

an RF frequency generator for directing RF energy at a particular frequency to

said antenna,

a detector for receiving reflected RF energy ~~which has impinged on~~ from said

antenna, said reflected energy having a different frequency that is dependent on the physical

property being monitored, and

a processor for determining from <u>a difference between said particular frequency and said different frequency</u> ~~said reflected frequency~~ the state of the <u>physical</u> property being monitored.

34. (Currently Amended)   The <u>apparatus</u> ~~method~~ of claim 33 including

said non-linear element being a rectifying diode.

35. (Currently Amended)   The <u>apparatus</u> ~~method~~ of claim 33 including

said RF frequency generator being structured to produce interrogating RF energy in the form of a sine wave.

36. (Currently Amended)   The <u>apparatus</u> ~~method~~ of claim 35 including

said antenna being structured to produce a half wave rectified sine wave from said interrogating RF energy.

37. (Currently Amended)   The <u>apparatus</u> ~~method~~ of claim 36 including

said antenna being structured to provide said half wave rectified sine wave at a fundamental Fourier series component which is about double the frequency of said sine wave.

38. (Currently Amended)   The <u>apparatus</u> ~~method~~ of claim 34 including

said RF frequency generator being structured to provide at least two said interrogating RF frequencies.

39. (Currently Amended)   The <u>apparatus</u> ~~method~~ of claim 34 including

a spectrum analyzer for analyzing said different frequencies.

40. (Currently Amended)   The <u>apparatus</u> ~~method~~ of claim 34 including

a second non-linear element cooperating with said non-linear element to provide a variable readout which is a function of ~~a specific~~ <u>said</u> physical <u>property</u> ~~condition~~.

41. (Currently Amended)   The <u>apparatus</u> ~~method~~ of claim 40 including

a second non-linear element cooperating with said non-linear element to provide a variable readout which is a function of ~~a specific~~ <u>said</u> physical <u>property</u> ~~condition~~.